History of Newborn Hearing Screening

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THE EAR FOUNDATION®
OF ARIZONA

Why Screen?

- More than 200 infants each year in Arizona
- Early Detection makes a lifetime of difference for that child and the family

We Practiced on Everyone

Figure 14 Strain gauge and earphone on a Dachshund. (Reproduced, with permission, from Bradford *et al.*, 1973.)

280

From Breathing to Heart Rate

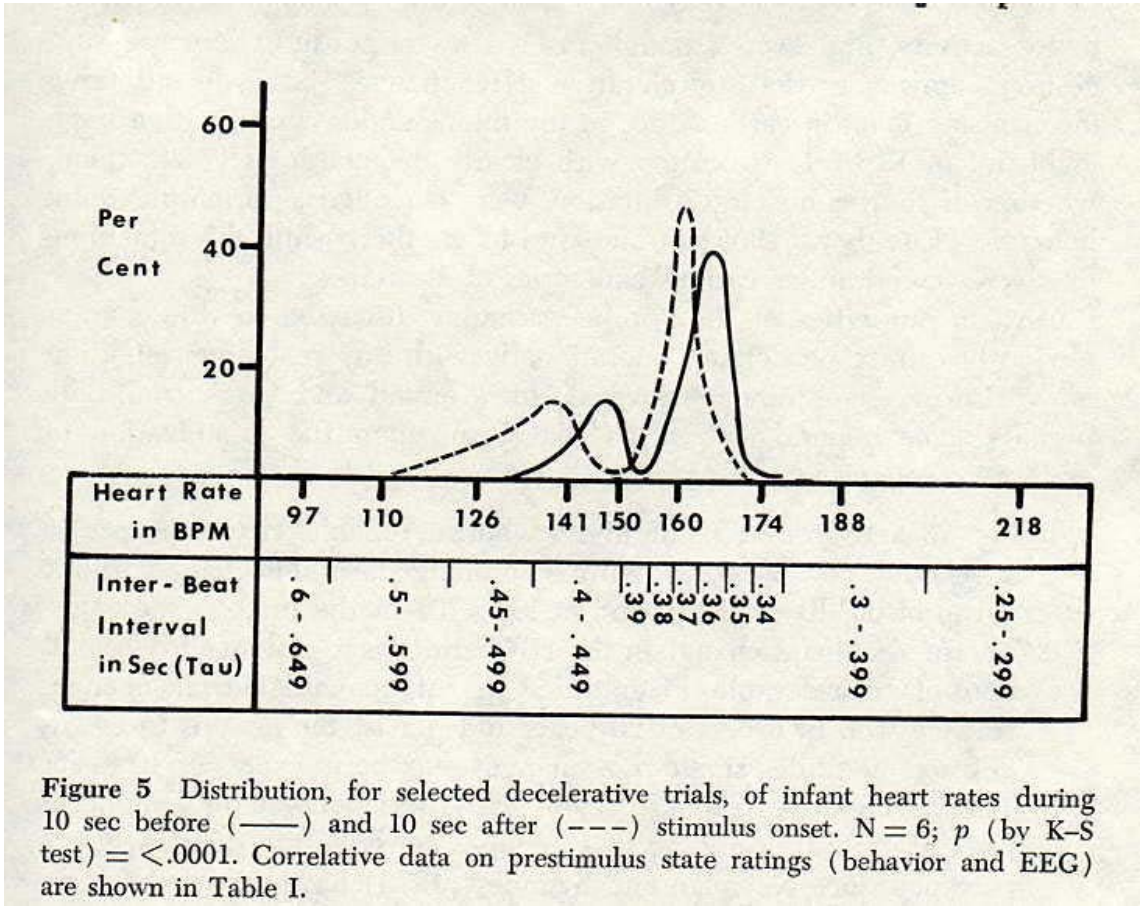

Figure 5 Distribution, for selected decelerative trials, of infant heart rates during 10 sec before (——) and 10 sec after (– – –) stimulus onset. N = 6; p (by K–S test) = <.0001. Correlative data on prestimulus state ratings (behavior and EEG) are shown in Table I.

Sounds

To Standardized Sounds

FIGURE 1–1. A specially designed battery-powered infant hearing screener used in the early 1960s known as the Apriton (from the auropalpebral reflex, the involuntary body movement and eye blink resulting from sudden sound onset). The examiner presented a sudden onset narrow-band noise stimulus of 90 dB SPL followed by observation for the presence or absence of reflexive infant responses.

To Motion Detectors

Today’s Equipment

Joint Committee on Infant Hearing Risk criteria

1971

- Immediate family history hearing loss
- Rubella
- Family history of malformation
- Any family member with hearing loss in childhood
- Born with structural anomaly
- Bilirubin levels > 20 mg/100 mg, exchange transfusions
- Birthweight < 1500 gm
- Abnormal otoscopic findings

1982

- Family hx childhood hearing loss
- Perinatal infection
- Malformations
- Birthweight <1500 gm
- Hyperbilirubenia
- Bacterial meningitis
- Apgar 0-3

Risk criteria 1990 0-28 days

0-28 Days

- Fmly hx
- Congential infection
- Craniofacial anomalies
- Birthwgt <1500 gms
- Ototoxic meds
- Bacterial Meningitis
- Apgar 0-3 at 5 minutes
- Mechanical ventilation >10 days
- Stigmata, e.g., Waardenburg

29 Days to 2 Years

- Parent concern
- Bacterial meningitis
- Neonatal factors (e.g., ventilation, etc)
- Head trauma
- Stigmata
- Neurodegenerative disorders
- Infectious diseases (e.g., mumps)

1993 NIH Consensus Conference

- Universal hearing screening prior to hospital discharge
- Use OAEs or ABR techniques

1994 Arizona

- Scottsdale Shea and Osborn
- Phoenix Indian Medical Center
- Flagstaff Medical Center Screening
- All level III Nurseries

2000 JCIH Position Statement

- Screen all babies prior to hospital discharge
- Use OAE or ABR
- Introduction of 1-3-6 concept
  - Screen by one month
  - Diagnosis by three months
  - Early intervention prior to six months

Arizona Early Hearing Detection and Intervention

- Never Too Young in 1987
- St Luke's Health Initiatives
  - Equipment
  - Technical Support
- National Center for Hearing Assessment and Management
  - Beta test site for HI*Track
- Walsh Bill
  - Maternal and Child Health Grants
  - Center's for Disease Control and Prevention Grants
- Legislation in 2005 Rules in 2006
  - Established the program within ADHS
  - Required Reporting
  - Tracking and Follow-up
  - Education
- National Initiative for Children's Healthcare Quality-Learning Collaborative

2007 JCIH.org

- Changed definition of target hearing loss
- Protocols for NICU vs Well baby
- Communication with parents
- Back to one risk list for late onset and progressive losses

The Time is NOW!!

- Make sure all babies are screened
- NO babies are lost to follow-up
- The benefits of Early Identification are available for all of our children